4. WORK PLAN/ METHODOLOGY

Study of Literature Review and Theoretical Analysis-:

Study of various International Journal Papers, International conference papers and IEEE research papers and theoretical discussions according to the research papers

Selection of Parameters and Design Considerations-:

1. Selection of shape of micro strip antenna and its essential parameters like:
   a) Frequency of operation (f_o): The resonant frequency of the antenna must be selected appropriately.
   b) Dielectric constant of the substrate (ε_r): A substrate with a high dielectric constant reduces the dimensions of the antenna.
   c) Height of dielectric substrate (h): For the micro strip patch antenna to be used in certain applications (such as cell phones) it is essential that it is not bulky and to ensure this the height of the dielectric substrate can't be more than a few mm.

2. Design and calculations of other parameters like Height of substrate, Length of ground plane Width of ground plane Length of the patch, Width of the patch etc

3. Selection of Feeding Techniques**-:** Micro strip patch antennas can be fed by a variety of methods. These methods can be classified into two categories- contacting and non-contacting. The four most popular feed techniques used are the micro strip line, coaxial probe (both contacting schemes), aperture coupling and proximity coupling (both non-contacting schemes).

Optimization -:

Optimization of parameters, Optimization of Micro strip patch antenna with numerical modeling. Apply the various techniques for improvement of bandwidth on MPA like directly coupled and gap coupled parasitic patches, by using thick substrate, Multilayer

configuration-In these two or more patches on different layers of the dielectric substrate are stacked on each other. These two layers may be separated by either air gap or foam yielding, defected ground plane structure etc

Simulation of Micro Strip Patch Antenna-:

The software simulations of work will be focused on designing and testing of patch antennas using software called Ansoft HFSS (High Frequency Structure Simulator) software

Fabrication and testing of antenna-:

1) Fabrication of prototype antenna model- The Antenna will be fabricated on low cost substrate glass epoxy using the standard photolithography and etching techniques. The developed antennas will be tested for its various characteristics.
2) Measurement of antenna parameters.
3) Comparison of Simulated and measured results.
4) Summary of the conclusion, limitations and scope for further extension of the study.
5) International Journal/Conference Paper Publication.
6) Thesis writing